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Patent claims

1. DNA sequences, containing the coding region of a plastidic Glucose Translocator and having the nucleotide sequence as documented in the attachment, whereby the sequence protocols are part of this claim, as well as parts and derivations of said DNA sequences, which are derived from said DNA sequences through insertion, deletion or substitution and which code for a plastidic protein having the biological activity of a Glucose Translocator, and further DNA sequences that hybridize to these DNA sequences or parts thereof or derivations thereof.

2. Plasmids and phageimids containing a DNA sequence or parts or derivations of the DNA sequences or a further DNA sequence according to claim 1.

3. Phagemid pBSC-E43/30-3 according to claim 2 deposited under the DSM number DSM 12243 as *E. coli* strain DH5α pBSC-E43/30-3 containing this phageimid.

4. Phagemid pBSC-Zm-pGT according to claim 2 deposited under the DSM number DSM 12862 as *E. coli* strain SOLR pBSC-Zm-pGT containing this phageimid.

5. Phagemid pBSC-St-pGT according to claim 2 deposited under the DSM number DSM 12863 as *E. coli* strain DH5α pBSC-St-pGT containing this phageimid.

6. Bacteria, containing a DNA sequence or a part or a derivation of said DNA sequences or a further DNA sequence according to claim 1 or a plasmid/phageimid according to one of the claims 2 to 5.

7. Yeasts, containing a DNA sequence or a part or a derivation of said DNA sequences or a further DNA sequence according to claim 1 or a plasmid according to one of the claims 2 to 5.

8. Plant cells containing a plasmid according to claim 2.

9. Transformed plant cells and transgenic plants regenerated therefrom containing a DNA sequence or a part thereof or a derivation thereof or a further DNA sequence according to claim 1, whereby said sequence or part or derivation thereof or further DNA sequence has been introduced into said plant cells as a part of a recombinant DNA molecule.

10. Use of the DNA sequences or parts or derivations thereof or of said further DNA sequences according to claim 1

a) for the introduction into prokaryotic or eukaryotic cells, whereby said sequences are eventually linked with regulatory elements, which would lead to the transcription and translation in the cells and to the expression of a translatable mRNA, which would lead to the synthesis of a Glucose Translocator,

b) for the identification of insertion mutants, for homologous recombination or for the expression of a non-translatable RNA, which, by means of an "anti-sense" effect, of a cosuppression or of a ribozyme activity, hinders the synthesis of one or more endogenous plastidic Glucose Translocators,

c) for changing the carbon/nitrogen relations in leaves or in heterotrophic tissues, respectively, in particular for increasing the starch content,

d) for reducing the build-up of sugars during starch mobilization,

e) for the isolation of DNA sequences, coding for a peptide, which has biological activity of a Glucose Translocator,

f) for serving as "targeting" sequences in order to assist to direct prokaryotic or eukaryotic proteins, especially enzymes or proteins, which catalyse the active or passive transport of metabolites across

membranes, into the plastid envelope membrane, into the plastid stroma or into the thylakoid,

g) whereby these sequences contain coding regions, which code for a mature protein having the biological activity of a Glucose Translocator, for combination with "targeting" sequences for other cell compartments or cellular membrane systems, by which means the mature protein is directed into other compartments or membrane systems,

h) for the identification of substances, which inhibit the transport of hexoses across the inner plastidic envelope membrane, and/or

i) for the isolation of genomic clones, in particular, the utilization of the promoter or of promoter regions to direct tissue-specific expression of genes.